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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/362,021	07/27/1999	ROBERT J. MEYER	D/96602	6311

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EXAMINER

VIDA, MELANIE M

ART UNIT	PAPER NUMBER
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2697

DATE MAILED: 04/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/362,021

Applicant(s)

MEYER ET AL.

Examiner

Melanie M Vida

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 July 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 July 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 7/27/99 has been considered by the examiner and is attached to this office action.

Drawings

2. Figure 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. **Claims 1-3, 16, 19, 20** are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1-3, 9, 13, and 14 of copending Application No. 09/362,022. Although the conflicting claims are not identical, they are not patentably distinct from each other because the **claim 1** in both applications refers to an original image, which reads on both the "improved print image", and an "improved font",

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“halftone cell comprises a plurality of original pixels”, which is similar to the “original image of original pixels”. Further, both has auxiliary pixels, where the “first auxiliary pixel is in replacement of an original pixel of said original pixels for enhancing the printing of the original image”. Referring to **claims 2, 3** the application and the copending application claim the same subject matter that the “first auxiliary pixel is a black auxiliary pixel”, and “the first auxiliary pixel is a white auxiliary pixel”, respectively. Referring to **claim 16**, the application and the copending application in claim 9, refer to the same method for improving the printing of an image, i.e. “receiving a source image comprising original pixel data”, and “processing the source image original pixel data”. Further, the reference in claim 9 of the copending application refers to a “halftone cell including embedded pixels” which is substantially similar to this application in that the method also “embeds auxiliary pixels”. Referring to **claim 19**, the application and the copending application in claim 13 refers to the same digital imaging system for “receiving a document image in a form suitable for processing”, and “processing the document image in an image processing system to embed auxiliary pixels in order to enhance the image. Finally, **claim 20**, is substantially similar to the copending application claim 14, in that the digital imaging system has the same digital front end. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22** are rejected under 35 U.S.C. 102(b) as being anticipated by Mailloux, U.S. Patent Number 5,555,557 (hereinafter, Mailloux).

Mailloux teaches with regards to **claim 1**, a method to convert bit-map images, *read as original images of original pixels*, at a first resolution and optimized for a particular printer technology, *read as an improved print image* (col. 3, lines 8-14). Mailloux further teaches that the resolution conversion of the image, *read as an improved print image*, is implemented on a pixel-by-pixel basis, based on the neighboring image pixels. Magnified pixels, Z_1, Z_2, Z_3, Z_4 are determined based on the white or black color of the parent pixel, E, *where the magnified pixels are read as the auxiliary pixels*. Mailloux also teaches that an auxiliary pixel, Z_1 , replaces an original pixel, E, enhancing the resolution for printing the original image, where he states that the output pixel Z_1 becomes black if the conditions for the original pixels A, B, C, D, F, satisfy a if, else condition in col. 5, lines 14-39.

Referring to **claims 2 and 3**, Mailloux teaches us that magnified "output pixels", Z_1, Z_2, Z_3, Z_4 , replace the original pixels, A, B, C, D, E, wherein Z_1 is read as the *first auxiliary pixel*, which may either be made "white" by the equation, $Z_1=E$, inherently taught as "white", (col. 4, lines 36-38), and (col. 5, 38-39), or Z_1 is made "black" if pixels (A, G) are black and (B, C, D, E, F, H, I) are white, (col. 5, lines 37-39).

Mailloux, inherently, teaches **claim 4**, that the auxiliary pixel, Z_1 , may be placed adjacent to an original image shape, in the two-pixel thick line, as per figure 3a, in order to render a thicker black line in figure 3b, (col. 6, lines 44-67).

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Mailloux, inherently, teaches **claims 5, 6**, an improved print image, figure 5c, from an original image in figure 5a using the method where Z_1 , *read as an auxiliary pixel*, may be placed interior and/or exterior to the original image shape in order to increase the image resolution from 5a to 5b (col. 7, lines 31-64).

Mailloux, inherently, teaches **claims 7, 8**, where Z_2 , *read as a second auxiliary pixel*, and Z_1 , *read as a first auxiliary pixel*, are spaced from the image, being equally distant from the image shape, which is an inherent property of a "symmetrically, unique magnified output pixels", Z_1, Z_2, Z_3, Z_4 , (col. 4, lines 57-59) around a vertical 2-pixel thick line, *read as an object surface*, such as figure 3a magnified to a five-pixel thick line, figure 3b,

Mailloux, inherently, teaches **claims 9, 10**, where Z_2 , *read as a second auxiliary pixel*, and Z_1 , *read as a first auxiliary pixel*, are superposed around a center, original pixel E, of the original pixels, (A, B, C, D, E, F, G, H, I), such that, Z_1 and Z_2 are *spaced at least one or at least two pixels distant* around any of the six original pixels (A to I) that could comprise a two-pixel line in figure 3a, 100, *read as the original image shape*, to render at an enhanced resolution, figure 3b, 102, a five-pixel thick line, *read as an improved print image*.

Mailloux, inherently, teaches **claim 11**, where the pixel, Z_1 , *read as a first auxiliary pixel*, may be deployed as a RET type adjacent to the original pixels in an angled edge at the black-to-white transition area (fig. 4a, 200), *read as stair-case transition in an original image*, in order to smooth it such that the appearance of jaggies are reduced, *read as an improved print image* (col. 7, lines 1-30).

Mailloux teaches **claim 12**, of an image with reduced appearance of jaggies, *read as an improved print image*, where a pattern of auxiliary pixels, Z_1, Z_2, Z_3 , and Z_4 are used to replace

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the original pixels (A, B, C, D, E, F, G, H, and I) in an original angled edge at the black to white transition area (col. 5, line 14 through col. 6, line 43), (col. 7, lines 1-30).

Mailloux teaches **claim 13**, of a black-to-white transition area near an angled edge with a reduced appearance of jaggies, figure 4b, 202, *read as an improved print image*, where Z_1, Z_2, Z_3 , and Z_4 , read as a pattern of auxiliary pixels, clustered about an original angled edge, figure 4a, 200, *read as the shape edge in an original image* (col. 7, lines 1-30).

Mailloux, inherently, teaches that a checkerboard pattern in **claim 14**, may be produced from the determination of the binary state of the symmetrically magnified pixels, Z_1, Z_2, Z_3, Z_4 , based on the binary state of the original pixel, E, and the surrounding pixels (A, B, C, D, F, G, H, I), (col. 4, lines 56-63) using the logic of the pseudo-code (col. 5, lines 14 through col. 6, line 43).

Referring to **claim 15**, please refer to the likes of claim 9-10, wherein the pattern of auxiliary pixels, Z_{1-4} is at least one or two pixels distant from the original image shape.

Referring to **claim 16**, please refer to the likes of claim 1. In addition, Mailloux further discloses that the input image may be obtained from an input scanner, or personal computer software packages prior to printing (col. 1, lines 35-50).

Referring to **claim 17**, Mailloux discloses the problems with an electrophotographic printing process (col. 2, lines 35-45), *read as printing of an electrostatic image*, and teaches a method to substitute a pattern of auxiliary pixels, Z_{1-4} , for the original pixels, A, B, C, D, E, F, G, H, and I (col. 4, lines 56-63), through the logic of the pseudo-code he teaches, (col. 5, line 14 through col. 6, line 43), *read as morphologically manipulating the original pixel data to substitute auxiliary pixels for original data pixels*.

Referring to **claim 18**, Mailloux discloses a method for (1) increasing the resolution of an image, *read as improving the printing of an electrostatic image*, (2) inherent teachings of a first and second memory space, (col. 1, lines 66), for a source image obtained from input scanners or personal computer software (col. 1 lines 44-46), and replicating the source image as a (3) dilated segment of the whole source image, *read as a working image*, (col. 4, lines 31-33), and selecting a (3x3) array of the original image pixels (A, B, C, D, E, F, G, and I), *read as an outline of the first resultant working image*, and substituting the output pixels, Z_{1-4} , *read as the auxiliary pixels*, through pseudo-code (col. 5, through col. 6), *read as an OR operation of the second resultant working image with the source image*.

Referring to **claim 19**, please refer to the likes of claim 1 and claim 16.

Referring to **claim 20**, the digital front end is interpreted by the teachings of Mailloux to be either a scanner or personal computer software packages (col. 1, lines 40-49).

Referring to **claim 21**, the morphological operation is interpreted by the teachings of Mailloux to be the operations of comparing a 3x3 image segment with a pattern of auxiliary pixels (col. 4, lines 40-55).

Referring to **claim 22**, please refer to the likes of claim 18.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bracco et al. US Patent Number 6,181,438 B1 a method and apparatus for control of lightness/darkness of a digital image rendered by a printing system.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie M Vida whose telephone number is (703) 306-4220.

The examiner can normally be reached on 8:30 am 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Hofsass can be reached on (703) 305-4717. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-6743 for regular communications and (703) 308-6743 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

mmv

MMV
March 24, 2003

KA Williams

Kimberly A. Williams
Primary Examiner
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